(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATERAL COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date 29 January 2004 (29.01.2004)

PCT

(10) International Publication Number WO 2004/009642 A3

(51) International Patent Classification⁷:

C08B 37/00

(21) International Application Number:

PCT/GB2003/003236

(22) International Filing Date:

17 July 2003 (17.07.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

0216861.5

19 July 2002 (19.07.2002) GE

- (71) Applicant (for all designated States except US): THE UNIVERSITY OF LIVERPOOL [GB/GB]; Senate House, Abercromby Square, Liverpool L69 3BX (GB).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): POWELL, Andrew [GB/GB]; 23 Ashley Meadows, Romsey, Hants SO51 7LT (GB). TURNBULL, Jeremy [GB/GB]; Willows Cottage, 11 Doddington, Hopton Wafers, Shropshire DY14 0NT (GB). YATES, Edwin [US/US]; 52 Clarendon Road, Four Oaks, Sutton Coldfield, West Midlands B75 5LA (US).
- (74) Agents: CHAPMAN, Paul, W. et al.; Kilburn & Strode, 20 Red Lion Street, London WC1R 4PJ (GB).

- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report: 1 July 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

national Application No B 03/03236

A. CLASSIF IPC 7	COSB37/00	•	.•
According to	International Patent Classification (IPC) or to both national class	sification and IPC	
B. FIELDS S	SEARCHED	•	
	cumentation searched (classification system followed by classification sy	ication symbols)	
Documentati	ion searched other than minimum documentation to the extent the	nat such documents are included in the fields sea	arched
Electronic de	ata base consulted during the international search (name of data	a base and, where practical, search terms used	<u>-</u>
	ternal, BIOSIS		
C. DOCUME	ENTS CONSIDERED TO BE RELEVANT	·	
Category *	Citation of document, with indication, where appropriate, of the	e relevant passages	Relevant to claim No.
Х	DATABASE BIOSIS BIOSCIENCES INFORMATION SERVICE	E,	1-22
•	PHILADELPHIA, PA, US; WU ZHENGLIANG L & AL: "A NEW S DEFINING CRITICAL FUNCTIONAL G HEPARAN SULFATE" XP002268531 abstract & FASEB JOURNAL, vol. 16, no. 6, April 2002 (20 pages 539-545, MASSACHUSETTS INSTITUTE of TEC CAMBRIDGE, USA	002-04),	
		-/ :	•
V 5	ther documents are listed in the continuation of box C.	X Patent family members are listed	in appex
		X Patent family members are listed	
"A" docume consk filing of the country which citatio "O" docume other "P" docume	ent defining the general state of the art which is not dered to be of particular relevance document but published on or after the International date ent which may throw doubts on priority claim(s) or a lis cited to establish the publication date of another or other special reason (as specified) nent referring to an oral disclosure, use, exhibition or means lent published prior to the international filing date but than the priority date claimed	"T" later document published after the into or priority date and not in conflict with cited to understand the principle or the invention. "X" document of particular relevance; the cannot be considered novel or cannot involve an inventive step when the document of particular relevance; the cannot be considered to involve an indocument is combined with one or ments, such combination belng-obvicin the art. "&" document member of the same patent.	n the application but seeny underlying the claimed invention to considered to coument is taken alone claimed invention eventive step when the one other such document to a person skilled
	actual completion of the international search	Date of mailing of the international sea	
2	29 January 2004	0 7. 05.	04 -
Name and	mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Eav. (431-70) 340-3016	Authorized officer Contet, F	

2



INTERNATIONAL SEARCH REPORT

PO iB 03/03236

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT				
Category Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No.				
X	US 6 127 347 A (HOLME KEVIN R ET AL) 3 October 2000 (2000-10-03) column 1, line 25 - line 55 column 4, line 58 - column 5, line 10 column 12, line 57 - line 63; claims 1,10,11; examples 1,3,4		1-22	
٠			·	



PCT/GB 03/03236

Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)				
This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:				
1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:				
2. Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:				
3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).				
Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)				
This International Searching Authority found multiple inventions in this international application, as follows:				
see additional sheet				
As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.				
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.	-			
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:				
4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:				
1-22 (partially)				
Remark on Protest The additional search fees were accompanied by the applicant's protest.				
No protest accompanied the payment of additional search fees.				

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-22 (partially)

A method for the production of a library of heparan sulfate derivatives said method comprising a chemical modification step, specially characterised in that the step is selected from the steps A or B.

2. claims: 1-22 (partially)

A method for the production of a library of heparan sulfate derivatives said method comprising a chemical modification step, specially characterised in that the step is selected from the steps C or D.

3. claims: 1-22 (partially)

A method for the production of a library of heparan sulfate derivatives said method comprising a chemical modification step, specially characterised in that the step is selected from the steps E or G.

4. claims: 1-22 (partially)

A method for the production of a library of heparan sulfate derivatives said method comprising a chemical modification step, specially characterised in that the step is selected from the steps F or H.

5. claims: 1-22 (partially)

A method for the production of a library of heparan sulfate derivatives said method comprising a chemical modification step, specially characterised in that the step is selected from the steps I or J.

6. claims: 1-22 (partially)

A method for the production of a library of heparan sulfate derivatives said method comprising a chemical modification step, specially characterised in that the step is selected from the steps K to 0.

7. claims: 1-22 (partially)

International Application No. PCT/ GB 03/03236

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

A undefinite number of possible methods for the production of libraries of heparan sulfate derivatives comprising a combination of chemical modification steps, specially characterised in that two or three modification steps of said selection the step are selected from the group A to O.



INTERNATIONAL SEARCH REPORT

Interna	ational Application No	
Pι	iB 03/03236	

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 6127347	A	03-10-2000	US AU WO AU CA EP JP WO	5583121 A 4988096 A 9625169 A2 694177 B2 1727695 A 2158052 A1 0688221 A1 8508540 T 9519176 A1	10-12-1996 04-09-1996 22-08-1996 16-07-1998 01-08-1995 20-07-1995 27-12-1995 10-09-1996 20-07-1995